

BIOTIC COMMUNITIES

AQUATIC COMMUNITY DATA

The White River region is the most diverse region in Missouri as far as number of fish species is concerned. Fifty-six species or subspecies have a localized distribution in this basin or have a limited distribution elsewhere in the state. A localized distribution is one in which organisms are found in great abundance in an area, but may also be found in limited or reduced abundance in other areas of their range. Species or subspecies which are restricted to the White River region include: the Ozark bass, duskystripe shiner, White River or Arkansas saddled darter, and the yoke darter. Each of these species has been collected in the James River Basin. Four races or subspecies in the basin are found elsewhere in the state, but have a morphological distinction in the White River region. These species are the longear sunfish, rainbow darter, fantail darter, and the orangethroat darter (Pflieger 1989).

This region also has several unique or limited-distribution crayfish species ([Table 17](#); Pflieger 1987 and 1989). Several amphibians and reptiles which have a localized distribution in the James River Basin are listed in [Table 18](#).

The mussels in the James River Basin were sampled by Oesch in 1967-1974 and Buchanan in 1982. The objectives of Buchanan's study were to determine the presence of the Curtis Pearly Mussel (*Epioblasma florentina curtisi*) and the distribution and abundance of the basin's other naiad species. Buchanan found 24 species, but no Curtis Pearly Mussels. He also found that sewage effluent from the Springfield area had an impact on the naiad fauna in 20 miles of the James River downstream from the mouth of Wilson Creek. The naiad fauna has yet to recover. Information on abundance, composition, and species profiles can be found in Buchanan (1982). The mussels found in the James River Basin are listed in [Table 19](#).

FISH COMMUNITY DATA

Fish collections have been made throughout the basin since the early 1930s ([Table 20](#)). There are 71 fish species which have been collected since that time ([Table 21](#)). In 1995, fish were collected by Fisheries District 9 staff from William Pflieger's historic collection sites, as well as additional sites located throughout the basin ([Table 22](#), Figures 6A-D). Fish species distributions by stream are listed in [Table 23](#). In addition to the collections by Department staff, fish have also been sampled from the James River at Highway 125 Bridge and the Old Bridge at Highway D east of Springfield in 1994 and 1995 by Dan Beckman, Ph.D., at Southwest Missouri State University ([Table 24](#)).

Several species were collected historically by Pflieger, but have been absent from the recent collections made by Beckman and District 9 staff. These species are:

[Highfin carpsucker \(*Carpoides velifer*\)](#)

[Quillback \(*Carpoides cyprinus*\)](#)

[Black bullhead \(*Ameirus melas*\)](#)

[Yellow bullhead \(*Ameirus natalis*\)](#)

Table 17. Crayfish species found in the James River Basin.

COMMON NAME	SPECIES NAME
Ozark Crayfish	<i>Orconectes ozarkae</i>
(No common name given)	<i>Cambarus maculatus</i>
Bristley Cave Crayfish	<i>Cambarus setosus</i>
Ringed Crayfish	<i>Orconectes neglectus</i>
Longpincer Crayfish	<i>Orconectes longidigitus</i>
Williams' Crayfish or White River Midget Crayfish	<i>Orconectes williamsi</i>
(No common name given)	<i>Orconectes menae</i>
(No common name given)	<i>Orconectes naias</i>
Woodland Crayfish	<i>Orconectes hylas</i>
Spothanded Crayfish	<i>Orconectes punctimanus</i>
Golden Crayfish	<i>Orconectes luteus</i> **
Coldwater Crayfish	<i>Orconectes eupunctus</i>
Mammoth Spring Crayfish	<i>Orconectes marchandi</i> **
Dwarf Crayfish	<i>Cambarellus pueur</i> **
Meek's Crayfish	<i>Orconectes meekii</i>
Hubb's Crayfish	<i>Cambarus hubbsi</i>

Source: Pflieger (1987 and 1989) and the Missouri Benthic Database, available through MDC.

**Unconfirmed locations due to possible misidentification.

Redear sunfish (*Lepomis microlophus*)

White bass (*Morone chrysops*)

Freshwater drum (*Aplodinotus grunniens*)

Wedgespot shiner (*Notropis greenei*)

Ozark shiner (*Notropis ozarcanus*)

Fathead minnow (*Pimephales promelas*)

Golden shiner (*Notemigonus crysoleucas*)

Creek chubsucker (*Erimyzon oblongus*)

Bigeye chub (*Hybopsis dissimilis*)

White River saddled darter (*Etheostoma e. euzonum*)

Fantail darter (*Etheostoma flabellare*)

Speckled darter (*Etheostoma stigmaeum*)

Gilt darter (*Percina evides*)

Mottled sculpin (*Cottus bairdi*)

Checkered madtom (*Noturus flavater*)

Ozark cavefish (*Amblyopsis rosae*)

Inadequate sampling methods or effort could explain the absence of all of these species from the collections of Beckman and Fisheries District 9 staff. Inadequate sampling methods are probably the best explanation for the absence of the highfin carpsucker, quillback, bullheads, white bass, and freshwater drum. These species are large fish, and most of the sampling was conducted with seines. Net avoidance and the inability of the researchers to sample the deeper preferred habitats of these species could lead to their absence in recent collections. Samples were collected in August and September. Therefore, white bass is probably absent from recent collections because it usually occurs in streams only during the spring spawning run. The golden shiner and creek chubsucker may also be missing from collections for no other reason than inadequate sampling effort.

In some instances, however, there could be other reasons for the absence of a particular species. For instance, the redear sunfish has not been collected from streams in the basin since the early 1970s. This species occupies some of the same stream habitats as other sunfish species represented in the collections. It is unlikely that sampling bias is the reason for the absence of this species in recent collections.

The wedgespot shiner lives in close association with the rosyface, telescope, and striped shiners which were all collected in abundance. The absence of wedgespot shiners is not likely due to sampling inadequacies. The checkered madtom is another example of this type of association. This species is

Table 18. Amphibians and reptiles with localized distributions in the James River Basin.

COMMON NAME	SPECIES NAME
Ringed Salamander	<i>Ambystoma annulatum</i>
Spotted Salamander	<i>Ambystoma maculatum</i>
Graybelly Salamander	<i>Eurycea multiplicata griseogaster</i>
Oklahoma Salamander	<i>Eurycea tynerensis</i>
Ozark Zigzag Salamander	<i>Plethodon dorsalis angusticlavius</i>
Wood Frog	<i>Rana sylvatica</i>
Ground Snake	<i>Sonora semiannulata</i>
Western Pygmy Rattlesnake	<i>Sistrurus miliarius streckeri</i>

Source: Johnson (1987).

commonly found with the Ozark madtom which was collected in the basin.

The Ozark shiner and gilt darter have not been collected in the basin since before 1946. These species have very localized distributions in the Ozarks and may no longer occur in the basin. The fantail and White River (or Arkansas) saddled darters also have localized distributions in the basin and have not been collected since the early 1970s. This suggests that they no longer occur in the basin. The bigeye chub may also be extirpated from the basin.

Fathead minnows are most common in prairie region streams. When they are found in Ozark streams, it is probably the result of bait or hatchery releases. This could be the explanation for the absence of this species from the collections made by Beckman and Fisheries District 9 staff.

Threadfin shad (*Dorosoma petenense*), which had not appeared in historic collections, were collected by Fisheries District 9 staff on Flat Creek at the junction of Table Rock Lake. This species was introduced to Table Rock Lake.

One of the fish species collected historically is now on the Rare and Endangered Species Checklist of Missouri (MDC 1995b), the Ozark cavefish (*Amblyopsis rosae*). This species was not collected by Fisheries District 9 staff in 1995. There are three active Ozark cavefish sites in the basin.

Black bass populations were sampled by electrofishing in the James River in 1994 and 1995. Data for largemouth bass, spotted bass, smallmouth bass, Ozark bass, and longear sunfish are available at the Fisheries District 9 office in Springfield.

RARE, THREATENED, AND ENDANGERED SPECIES

The James River Basin is part of a region with a very diverse aquatic and terrestrial flora and fauna. This unique assemblage includes several state and federally listed threatened and endangered species. The federally listed endangered species occurring in the basin are the Missouri bladder-pod (*Lesquerella filiformis*), the Ozark big-eared bat (*Corynorhinus townsendii*), the Indiana bat (*Myotis sodalis*), and the gray bat (*Myotis griseescens*). The Ozark cavefish (*Amblyopsis rosae*) is federally listed as threatened.

The state listed endangered species (four of which are also classified federally) occurring in the James River Basin are Swainson's hawk (*Buteo swainsoni*), black-tailed jackrabbit (*Lepus californicus*), parsley haw (*Crataegus marshallii*), tansey mustard (*Descurainia pinnata pinnata*), a liprocarpha (*Liprocarpha durmmondii*), Ozark cavefish, Missouri bladder-pod, Indiana bat, and the gray bat. The federally endangered Ozark big-eared bat is thought to be extirpated in the basin. Indian physic (*Gillenia trifoliata*) is also believed to be extirpated in the basin.

Species in the basin that are listed by the state as rare or threatened are:

An Isopod (no common name) (*Caecidotea dimorpha*)

White River midget crayfish (*Orconectes williamsi*)

Marine vine (*Cissus incisa*)

Low prickly pear (*Opuntia macrorhiza*)

Stenosiphon (*Stenosiphon linifolius*)

Ozark wake robin (*Trillium pusillum* var *ozarkanum*)

Ozark corn salad (*Valerianella ozarkana*)

Texas horned lizard (*Phynosoma cornutum*)

Ozark spiderwort (*Tradescantia ozarkana*)

Highfin carpsucker (*Carpoides velifer*)

There are also several species in the basin which are included on the state watch list. These are:

Grotto salamander (*Typhlotriton spelaeus*)

Bristly cave crayfish (*Cambarus setosus*)

Ozark cave amphiod (*Stygobromus ozarkensis*)

Ostrich fern (*Matteuccia struthiopteris* var *pensylvanca*)

Purple false foxglove (*Agalinis purpurea*)

Broadwing sedge (*Carex alata*)

Yellow wood (*Cladrastis kentukea*)

Wood stonecrop (*Sedum ternatum*)

Royal catchfly (*Silene regia*)

Purple lilliput (*Toxolasma lividus*)

Eastern collared lizard (*Crotaphytus collaris*)

Northern river otter (*Lutra canadensis*)

False foxglove (*Agalinis skinneriana*)

Whitlow grass (*Draba aprica*)

Soapberry (*Sapindus drummondii*)

Ringed salamander (*Ambystoma annulatum*)

Checkered madtom (*Noturus flavater*)

Net spinning caddisfly (*Hydropsyche piatrix*)

ANGLER SURVEY DATA

Angler survey data have been collected on Table Rock Lake, at the foot of the basin. Summaries of these data can be found in various annual reports in the Southwest Regional Office in Springfield.

FISH INTRODUCTIONS

Documented stocking records are limited. The earliest releases of trout and salmon were probably around

Table 19. Mussel species found in the James River Basin.

COMMON NAME	SPECIES NAME
Paper Floater	<i>Anodonta imbecilis</i>
Giant Floater	<i>Anodonta grandis grandis</i>
Squaw Foot	<i>Strophitus undulatus undulatus</i>
Elk Toe	<i>Alasmidonta marginata</i>
Slipper Shell	<i>Alasmidonta viridis</i>
Fluted Shell	<i>Lasmigona costata</i>
Pistol-Grip	<i>Tritogonia verrucosa</i>
Three-Ridge	<i>Amblema plicata</i>
Wabash Pig-Toe	<i>Fusconaia flava</i>
Ozark Shell	<i>Fusconaia ozarkensis</i>
Purple Pimpleback	<i>Cyclonaias tuberculata</i>
Round Pig-Toe	<i>Pleurobema sintoxia</i>
Lady-Finger	<i>Elliptio dilatata</i>
Kidney Shell	<i>Ptychobranchus occidentalis</i>
Mucket	<i>Actinonaias ligamentina caunata</i>
Western Fan-Shell	<i>Cyprogenia aberti</i>
Ellipse	<i>Venustaconcha e. ellipsiformis</i>
Plea's Mussel	<i>Venustaconcha e. pleasi</i>
Fragile Paper Shell	<i>Leptodea fragilis</i>
Liliput Shell	<i>Toxolasma parvus</i>
Little Purple	<i>Toxolasma lividus glans</i>
Pond Mussel	<i>Ligumia subrostrata</i>
Rainbow Shell	<i>Villosa iris iris</i>
Little Spectacle Case	<i>Villosa lienosa lienosa</i>
Pink Mucket	<i>Lampsilis orbiculata</i>

Fat Mucket	<i>Lampsilis radiata luteola</i>
Neosho Mucket	<i>Lampsilis rafinesqueana</i>
Pocketbook	<i>Lampsilis ventricosa</i>
Broken Rays	<i>Lampsilis reeviana brevicula</i>
Pimple-Back	<i>Quadrula pustulosa pustulosa</i>
Purple Shell	<i>Potamilus purpuratus</i>
Asiatic Clam	<i>Corbicula fluminea</i>

Source: Oesch (1984) and Buchanan (1982).

Table 20. Historic fish collection summary for the James River Basin by location, date, and method of capture.

Sample Type--	Number of Species--
Kick---Kickseining	L---Large fish species
Drag---Drag seining	N---Nektonic fish species
Elec---Electroshocking	B---Benthic fish species
Trap---Trapnetting	T---Total fish species
Tox----Toxicant	H---Hybrid fish species

LOCATION NUMBER	STREAM NAME	MILE	LOCATION (T R S)	DATE	SAMPLE TYPE K D E T I R L T R C A E O A K G C X P	NUMBER OF SPECIES				
						L	N	B	T	H
1614A	JAMES RIVER S6	128	29N 18W 2	21 AUG 40	? X	6	14	7	27	0
1614B	JAMES RIVER S6	128	29N 18W 2	02 MAY 63	X X	8	15	10	33	0
1614C	JAMES RIVER S6	128	29N 18W 2	16 SEP 92	X X	3	10	7	20	0
1615A	JAMES RIVER S5	108	29N 20W 21	01 AUG 40	X X	2	14	6	22	0
1616A	JAMES RIVER S5	106	29N 20W 30	42 TO 46	? X	6	11	3	20	0
1616B	JAMES RIVER S5	106	29N 20W 30	46 TO 57	X X X	16	17	11	44	1
				11 MAY 63	X X					
1616C	JAMES RIVER S5	106	29N 20W 30	16 SEP 92	X X	4	9	8	21	0
1617A	PEARSON CREEK	1	29N 21W 26	31 JUL 40	? X	1	8	5	14	0
1618A	JAMES RIVER S4	86	28N 22W 26	09 JUL 42	? X	3	8	4	15	0
1618C	JAMES RIVER S4	86	28N 22W 26	17 SEP 92	X X	5	12	6	23	0
1619A	FINLEY CREEK S2	28	27N 19W 16	01 AUG 40	? X	6	11	7	24	0
1620A	FINLEY CREEK S1	20	27N 20W 14	14 JUL 42	? X	5	8	5	18	0
1620C	FINLEY CREEK S1	20	27N 20W 14	18 SEP 92	X X	3	10	7	20	0
1621A	FINLEY CREEK S1	11	27N 21W 22	01 AUG 40	X X	9	11	3	23	0
1622A	FINLEY CREEK S1	6	27N 22W 36	17 JUL 42	? X	4	6	5	15	1
1622B	FINLEY CREEK S1	6	27N 22W 36	16 JUN 64	X X	10	11	5	26	1
1622C	FINLEY CREEK S1	6	27N 22W 36	17 SEP 92	X X	4	13	7	24	0
1623A	CRANE CREEK	2	25N 23W 16	13 JUL 42	? X	4	8	3	15	0
1623C	CRANE CREEK	2	25N 23W 16	17 SEP 92	X X	3	10	4	17	0
1629A	UNNAMED SPRING	1	25N 23W 29	06 AUG 40	? X	0	5	3	8	0

1630A	JAMES RIVER S2	42	24N 23W 6	06 AUG 40	? X	7 12 7 26 0
				10 JUL 42	X X	
1630B	JAMES RIVER S2	42	24N 23W 6	17 JUN 64	X X	11 11 7 29 0
				21 JUL 64	X X	
1630C	JAMES RIVER S2	42	24N 23W 4	17 SEP 92	X X	8 12 2 22 0
1631B	UNNAMED	1	29N 17W 17	16 JUN 64	X X	0 4 4 8 0
1632B	JAMES RIVER S6	119	29N 19W 3	01 MAY 63	X X	3 13 9 25 0
1632C	JAMES RIVER S6	119	29N 19W 3	16 SEP 92	X X	4 12 8 24 0
1633B	JAMES RIVER S4	95	28N 21W 2	02 MAY 63	X X	1 10 8 19 0
1634A	JAMES RIVER S4	92	28N 21W 21	22 AUG 30	? X	3 11 7 21 0
1635B	JAMES RIVER S4	81	28N 22W 32	20 JUL 64	X X	8 7 6 21 0
1636B	JAMES RIVER S4	79	27N 22W 5	26 JUL 66	X X X	14 9 7 30 0
1637B	JAMES RIVER S4	78	27N 22W 6	17 JUN 64	X	11 11 4 26 0
1638B	JAMES RIVER S4	75	27N 23W 18	25 JUL 66	X X	11 5 0 16 0
1639B	FINLEY CREEK S2	33	27N 19W 1	16 JUN 64	X X	4 11 6 21 0
1640B	FINLEY CREEK S1	5	26N 22W 1	20 JUL 64	X X	8 13 7 28 1
1641B	JAMES RIVER S3	67	26N 22W 8	16 JUN 64	X X	10 12 7 29 0
				21 JUL 64	X X	
1642B	SILVER LAKE BRANCH	1	26N 22W 19	21 JUL 64	X X	0 4 5 9 0
1643B	JAMES RIVER S3	63	26N 22W 19	27 JUL 66	X X X	23 15 9 47 1
				52 TO 57	X X X	
1644B	CRANE CREEK	15	26N 24W 4	05 JUL 62	X X	2 7 4 13 1
				07 MAY 60	X X	
1645B	FLAT CREEK S2	44	23N 27W 9	9 SEP 64	X X	6 9 3 18 0
1749A	FLAT CREEK S1	34	24N 26W 6	08 AUG 40	? X	6 12 7 25 0
1749B	FLAT CREEK S1	34	24N 26W 6	09 SEP 64	X X	4 11 4 19 0
1749C	FLAT CREEK S1	34	24N 26W 6	30 SEP 92	X X	5 11 7 23 1
1750A	FLAT CREEK S1	20	25N 25W 6	06 AUG 40	? X	4 14 6 24 0
1750C	FLAT CREEK S1	20	25N 25W 6	30 SEP 92	X X	6 8 6 20 1
1751A	FLAT CREEK S1	14	24N 25W 34	13 JUL 42	? X	3 7 6 16 0
1751B	FLAT CREEK S1	14	24N 25W 34	10 SEP 64	X X	4 12 7 23 1
1751C	FLAT CREEK S1	14	24N 25W 34	30 SEP 92	X X	5 7 8 20 0
1752A	FLAT CREEK S1	2	24N 24W 27	06 AUG 40	? X	4 15 7 26 0

1753B	JAMES RIVER S1	21	24N 23W 16	52 TO 56	X X X	24 15 9 48 0
1843C	CRANE CREEK	18	26N 24W 30	21 APR 79	X X	6 5 4 15 0

Source: MDC Fish Collection Database Records and Summary dated 1991.

Sample Type--	Number of Species--
Kick---Kickseining	L---Large fish species
Drag---Drag seining	N---Nektonic fish species
Elec---Electroshocking	B---Benthic fish species
Trap---Trapnetting	T---Total fish species
Tox----Toxicant	H---Hybrid fish species

Table 21. Fish species list for the James River Basin.

Source: MDC Fish Collection Database Records and Summary dated 1991 and 1995 collections by Fisheries District 9 staff.

Status:

A---Collected before 1946

B---Collected between 1947 and 1973

C---Collected from 1974 to 1990

D---Collected in 1995 by Fisheries District 9

COMMON NAME	SCIENTIFIC NAME	STATUS
Longnose gar	<i>Lepisosteus osseus</i>	A, B, D
Threadfin shad	<i>Dorosoma petenense</i>	D
Gizzard shad	<i>Dorosoma cepedianum</i>	B, C, D
Rainbow trout	<i>Oncorhynchus mykiss</i>	B, C, D
Common carp	<i>Cyprinus carpio</i>	B D
Highfin carpsucker	<i>Carpoides velifer</i>	B
Quillback	<i>Carpoides cyprinus</i>	B
White sucker	<i>Catostomus commersoni</i>	A, B, C, D
Northern hog sucker	<i>Hypentelium nigricans</i>	A, B, C, D
River redhorse	<i>Moxostoma carinatum</i>	B D
Black redhorse	<i>Moxostoma duquesnei</i>	A, B, C, D
Golden redhorse	<i>Moxostoma erythrurum</i>	A, B, C, D
Black bullhead	<i>Ictalurus melas</i>	A, B, C
Yellow bullhead	<i>Ictalurus natalis</i>	A, B, C
Channel catfish	<i>Ictalurus punctatus</i>	B D
Flathead catfish	<i>Pylodictis olivaris</i>	B D
Ozark bass	<i>Ambloplites constellatus</i>	A, B, C, D
Green sunfish	<i>Lepomis cyanellus</i>	A, B, C, D
Bluegill	<i>Lepomis macrochirus</i>	A, B, C, D
Longear sunfish	<i>Lepomis megalotis</i>	A, B, C, D
Redear sunfish	<i>Lepomis microlophus</i>	B

Smallmouth bass	<i>Micropterus dolomieu</i>	A, B, C, D
Spotted bass	<i>Micropterus punctulatus</i>	B, C, D
Largemouth bass	<i>Micropterus salmoides</i>	A, B, C, D
White crappie	<i>Pomoxis annularis</i>	A, B D
Black crappie	<i>Pomoxis nigromaculatus</i>	B D
White bass	<i>Morone chrysops</i>	B
Freshwater drum	<i>Aplodinotus grunniens</i>	B
Central stoneroller	<i>Campostoma anomalum</i>	A, B, C, D
Largescale stoneroller	<i>Campostoma oligolepis</i>	A, B, C, D
Hornyhead chub	<i>Nocomis biguttatus</i>	A, B, C, D
Bigeye shiner	<i>Notropis boops</i>	A, B, C, D
Striped shiner	<i>Notropis chrysocephalus</i>	A, B, C, D
Whitetail shiner	<i>Notropis galacturus</i>	A, B, C, D
Wedgespot shiner	<i>Notropis greenei</i>	A, B
Ozark minnow	<i>Notropis nubilus</i>	A, B, C, D
Duskystripe shiner	<i>Notropis pilsbryi</i>	A, B, C, D
Rosyface shiner	<i>Notropis rubellus</i>	A, B, C, D
Telescope shiner	<i>Notropis telescopus</i>	A, B, C, D
Ozark shiner	<i>Notropis ozarcanus</i>	A
Bluntnose minnow	<i>Pimephales notatus</i>	A, B, C, D
Fathead minnow	<i>Pimephales promelas</i>	B
Southern redbelly dace	<i>Phoxinus erythrogaster</i>	A, B, C, D
Golden shiner	<i>Notemigonus crysoleucas</i>	B, C
Creek chubsucker	<i>Erimyzon oblongus</i>	A, B, C
Creek chub	<i>Semotilus atromaculatus</i>	A, B, C, D
Streamline chub	<i>Hybopsis dissimilis</i>	A, B D
Bigeye chub	<i>Hybopsis amblops</i>	A, B
Grass pickerel	<i>Esox americanus</i>	A, B, C, D
Northern studfish	<i>Fundulus catenatus</i>	A, B, C, D

Blackspotted topminnow	<i>Fundulus olivaceus</i>	A, B, C, D
Mosquitofish	<i>Gambusia affinis</i>	C, D
Brook silverside	<i>Labidesthes sicculus</i>	A, B, C, D
Rainbow darter	<i>Etheostoma caeruleum</i>	A, B, C, D
White River saddled darter	<i>Etheostoma e. euzonum</i>	B
Yoke darter	<i>Etheostoma juliae</i>	A, B, C, D
Orangethroat darter	<i>Etheostoma spectabile</i>	A, B, C, D
Banded darter	<i>Etheostoma zonale</i>	A, B, C, D
Greensided darter	<i>Etheostoma blennioides</i>	A, B, C, D
Stippled darter	<i>Etheostoma punctulatum</i>	A, B, C, D
Golden fantail darter	<i>Etheostoma flabellare</i>	B
Speckled darter	<i>Etheostoma stigmaeum</i>	A, B, C
Gilt darter	<i>Percina evides</i>	A
Ohio logperch	<i>Percina c. caprodes</i>	A, B, C, D
Banded sculpin	<i>Cottus carolinae</i>	A, B, C, D
Ozark sculpin	<i>Cottus hypselurus</i>	A, B, C, D
Mottled sculpin	<i>Cottus bairdi</i>	B
Slender madtom	<i>Noturus exilis</i>	A, B, C, D
Ozark madtom	<i>Noturus albater</i>	A, B, C, D
Checkered madtom	<i>Noturus flavater</i>	A, B
Ozark cavefish	<i>Amblyopsis rosae</i>	B

Source: MDC Fish Collection Database Records and Summary dated 1991 and 1995 collections by Fisheries District 9 staff.

Status:

A---Collected before 1946

B---Collected between 1947 and 1973

C---Collected from 1974 to 1990

D---Collected in 1995 by Fisheries District 9

Table 22. Fish collection summary for the James River Basin by location and method of capture for 1995 Fisheries District 9 sampling.

Sample Type--	Number of Species--
Kick---Kickseining	L---Large fish species
Drag---Drag seining	N---Nektonic fish species
Elec---Electroshocking	B---Benthic fish species
Trap---Trapnetting	T---Total fish species
Tox----Toxicant	H---Hybrid fish species

LOCATION NUMBER	STREAM NAME	LOCATION (T R S)	DATE	SAMPLE TYPE						NUMBER OF SPECIES				
				K I X	D R K	E L G	T R C	T O P	C A E	A E A	L	N	B	T
	Wild Cat Creek	29N 17W 17	7-26-95	X	X						2	10	5	17
1614F	James River	29N 18W 2	7-26-95	X	X						4	9	5	18
	Jenkins Creek	24N 26W 24	8-1-95	X	X						4	10	4	18
1751F	Flat Creek	24N 25W 34	8-1-95	X	X						4	7	6	17
1645F	Flat Creek	23N 27W 9	8-7-95	X	X						4	7	2	13
1843C	Crane Creek	26N 24W 30	8-7-95	X	X						3	2	2	7
	Finley Creek	28N 17W 20	8-9-95	X	X						0	4	4	8
	Little Finley Creek	28N 18W 13	8-9-95	X	X						4	8	2	14
1749F	Flat Creek	24N 26W 6	8-10-95	X	X						5	11	5	21
1750F	Flat Creek	23N 25W 6	8-10-95	X	X						7	10	6	23
1642F	Silver Lake Branch	26N 23W 13	8-14-95	X	X						1	3	2	6
1644F	Crane Creek	25N 24W 4	8-14-95	X	X						2	2	1	5
	Spring Creek	26N 23W 19	8-14-95	X	X						1	1	3	5
1639B(move)*	Finley Creek	27N 19W 11	8-15-95	X	X						3	9	4	16
1619F	Finley Creek	27N 19W 16	8-15-95	X	X						7	10	5	22
1631F	James River Unnamed	29N 17W 17	8-16-95	X	X						2	8	3	13
1632F	James River	29N 19W 3	8-16-95	X	X						6	9	2	17
	Finley Creek	28N 18W 8	8-16-95	X	X						2	11	5	18
1615F	James River	29N 20W 21	8-17-95	X	X						5	8	6	19
1617A(move)*	Pearson Creek	29N 21W 35	8-17-95	X	X						2	6	3	11
1636B-1637B	James River	27N 22W 5/6	8-17-95	X	X						4	9	3	16
1641B	James River	26N 22W 8	8-30-95	X	X						3	9	7	19
1643F	James River	26N 22W 19	8-31-95	X	X						4	6	6	16
	Finley Creek	26N 22W 8	8-31-95	X	X						4	6	3	13
1641F	James River	26N 22W 8	8-31-95	X	X						2	3	2	7
	Wilson Creek	28N 23W 36	11-15-95	X	X									

1621F	Finley Creek	27N 21W 22	11-15-95	X X	0	8	6	14
1618F	James River	28N 22W 36	8-24-95	X X	3	7	5	15
1638F	James River	27N 22W 18	8-24-95	X X	2	6	5	13
1752A	Flat Creek	24N 24W 27	9-6-95	X	14	1	1	15
1630A,B	James River	24N 23W 6	9-14-95	X	15	3	1	19
	James River	25N 23W 34	9-14-95	X	11	1	3	15
1640F	Finley Creek	26N 22W 1	8-24-95	X X	6	8	7	21

*(move)= The sample site was moved one section downstream due to access constraints.

Sample Type--	Number of Species--
Kick---Kickseining	L---Large fish species
Drag---Drag seining	N---Nektonic fish species
Elec---Electroshocking	B---Benthic fish species
Trap---Trapnetting	T---Total fish species
Tox----Toxicant	H---Hybrid fish species

Table 23. Fish species list by stream in the James River Basin.

Species	James River	Finley Creek	Flat Creek	Crane Creek	Spring Creek	Wilson Creek	Little Finley Creek	Pearson Creek	Wild Cat Creek	Jenkin's Creek	Silver Lake Branch
<i>Lepisosteus osseus</i>	X	-	X	-	-	-	-	-	-	-	-
<i>Dorosoma petenense</i>	-	-	X	-	-	-	-	-	-	-	-
<i>Dorosoma cepedianum</i>	X	X	X	-	-	-	-	X	-	-	-
<i>Oncorhynchus mykiss</i>	X	-	-	X	X	-	-	-	-	-	-
<i>Cyprinus carpio</i>	X	-	X	-	-	-	-	-	-	-	-
<i>Carpiodes velifer</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Carpiodes cyprinus</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Catostomus commersoni</i>	X	-	X	X	-	-	-	-	-	-	-
<i>Hypentelium nigricans</i>	X	X	X	-	-	-	X	-	-	X	-
<i>Moxostoma carinatum</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Moxostoma duquesnei</i>	X	X	X	-	-	-	-	-	-	X	-
<i>Moxostoma erythrurum</i>	X	X	X	-	-	-	-	-	-	-	-
<i>Ictalurus melas</i>	X	X	-	X	-	-	-	-	-	-	-
<i>Ictalurus natalis</i>	X	X	X	X	-	-	-	-	-	-	-

<i>Ictalurus punctatus</i>	X	-	X	-	-	-	-	-	-	-	-
<i>Pylodictis olivaris</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Ambloplites constellatus</i>	X	X	X	X	-	-	-	-	-	-	-
<i>Lepomis cyanellus</i>	X	X	X	X	-	-	-	-	-	-	-
<i>Lepomis macrochirus</i>	X	X	X	X	-	-	X	-	X	-	X
<i>Lepomis megalotis</i>	X	X	X	X	-	-	-	X	-	-	-
<i>Lepomis microlophus</i>	-	-	-	-	-	-	-	-	-	-	-
<i>Micropterus dolomieu</i>	X	X	X	-	-	-	-	-	-	X	-
<i>Micropterus punctulatus</i>	X	X	X	-	-	-	-	X	X	-	-
<i>Micropterus salmoides</i>	X	X	X	-	-	-	-	-	-	-	-
Species	James River	Finley Creek	Flat Creek	Crane Creek	Spring Creek	Wilson Creek	Little Finley Creek	Pearson Creek	Wild Cat Creek	Jenkin's Creek	Silver Lake Branch
<i>Pomoxis annularis</i>	X	X	X	-	-	-	-	-	-	-	-
<i>Pomoxis nigromaculatus</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Morone chrysops</i>	-	-	-	-	-	-	-	-	-	-	-
<i>Aplodinotus grunniens</i>	X	-	-	-	-	-	-	-	-	-	-

<i>Campostoma anomalam</i>	X	X	X	X	-	-	X	X	X	X	-
<i>Campostoma oligolepis</i>	X	X	X	-	-	-	-	-	-	-	X
<i>Nocomis biguttatus</i>	X	X	X	X	-	-	X	X	X	X	-
<i>Notropis boops</i>	X	-	-	-	-	-	X	-	-	-	-
<i>Notropis chryscephalus</i>	X	X	X	X	-	-	-	X	X	X	-
<i>Notropis galacturus</i>	X	X	X	-	-	-	-	-	-	-	-
<i>Notropis greenei</i>	X	-	X	-	-	-	-	-	-	-	-
<i>Notropis nubilus</i>	X	X	X	-	-	-	X	X	X	X	-
<i>Notropis pilsbryi</i>	X	X	X	X	-	-	X	X	X	X	X
<i>Notropis rubellus</i>	X	X	X	X	-	-	X	X	-	X	-
<i>Notropis telescopus</i>	X	X	X	X	-	-	-	-	-	X	-
<i>Notropis ozarkanus</i>	-	-	X	-	-	-	-	-	-	-	-
<i>Pimephales notatus</i>	X	X	X	-	-	-	-	X	X	-	-
<i>Pimephales promelas</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Phoxinus erythrogaster</i>	X	X	X	X	X	-	X	X	X	X	X
<i>Notemigonus crysoleucas</i>	-	-	-	X	-	-	-	-	-	-	-
<i>Erimyzon oblongus</i>	X	X	X	X	-	-	-	-	-	-	-

Semotilus atromaculatus	X	-	X	-	-	-	-	-	X	X	X
Hybopsis dissimilis	X	X	X	-	-	-	-	-	-	-	-
Species	James River	Finley Creek	Flat Creek	Crane Creek	Spring Creek	Wilson Creek	Little Finley Creek	Pearson Creek	Wild Cat Creek	Jenkin's Creek	Silver Lake Branch
Hybopsis amblops	X	-	X	-	-	-	-	-	-	-	-
Esox americanus	X	X	X	X	-	-	-	-	-	-	-
Fundulus catenatus	X	X	X	X	-	-	-	X	-	X	-
Fundulus olivaceus	X	X	X	X	-	-	-	X	-	X	-
Gambusia affinis	X	X	-	-	-	-	-	-	-	-	-
Labidesthes sicculus	X	X	X	-	-	-	-	-	-	-	-
Etheostoma caeruleum	X	X	X	X	-	-	X	X	X	X	X
Etheostoma e. euzonum	X	-	-	-	-	-	-	-	-	-	-
Etheostoma juliae	X	X	X	-	-	-	-	-	-	-	-
Etheostoma spectabile	X	X	X	X	X	-	X	X	X	X	X
Etheostoma zonale	X	X	X	-	-	-	-	-	-	-	-
Etheostoma blennioides	X	X	X	X	-	-	-	-	-	-	-
Etheostoma punctulatum	X	X	-	-	-	-	-	X	X	-	X
Etheostoma flabellare	X	X	-	-	-	-	-	-	X	X	-
Etheostoma stigmaeum	X	-	-	-	-	-	-	-	-	-	-

Percina evides	X	-	-	-	-	-	-	-	-	-	-
Percina c. caprodes	X	X	X	-	-	-	-	-	-	-	-
Cottus carolinae	X	X	X	X	X	-	-	X	X	X	X
Cottus hypselurus	X	X	X	X	X	-	-	X	-	-	X
Cottus bairdi	-	-	-	-	-	-	-	-	-	-	-
Noturus exilis	X	X	X	-	-	-	-	-	X	-	-
Noturus albater	X	X	X	-	-	-	-	-	-	-	-
Noturus flavater	X	X	X	X	-	-	-	-	-	-	-
Amblyopsis rosae	-	-	-	-	-	-	-	-	-	-	-

Table 23. Fish species list by stream in the James River Basin.

Species	James River	Finley Creek	Flat Creek	Crane Creek	Spring Creek	Wilson Creek	Little Finley Creek	Pearson Creek	Wild Cat Creek	Jenkin's Creek	Silver Lake Branch
<i>Lepisosteus osseus</i>	X	-	X	-	-	-	-	-	-	-	-
<i>Dorosoma petenense</i>	-	-	X	-	-	-	-	-	-	-	-
<i>Dorosoma cepedianum</i>	X	X	X	-	-	-	-	X	-	-	-
<i>Oncorhynchus mykiss</i>	X	-	-	X	X	-	-	-	-	-	-
<i>Cyprinus carpio</i>	X	-	X	-	-	-	-	-	-	-	-
<i>Carpiodes velifer</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Carpiodes cyprinus</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Catostomus commersoni</i>	X	-	X	X	-	-	-	-	-	-	-
<i>Hypentelium nigricans</i>	X	X	X	-	-	-	X	-	-	X	-
<i>Moxostoma carinatum</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Moxostoma duquesnei</i>	X	X	X	-	-	-	-	-	-	X	-
<i>Moxostoma erythrurum</i>	X	X	X	-	-	-	-	-	-	-	-
<i>Ictalurus melas</i>	X	X	-	X	-	-	-	-	-	-	-
<i>Ictalurus natalis</i>	X	X	X	X	-	-	-	-	-	-	-

<i>Ictalurus punctatus</i>	X	-	X	-	-	-	-	-	-	-	-
<i>Pylodictis olivaris</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Ambloplites constellatus</i>	X	X	X	X	-	-	-	-	-	-	-
<i>Lepomis cyanellus</i>	X	X	X	X	-	-	-	-	-	-	-
<i>Lepomis macrochirus</i>	X	X	X	X	-	-	X	-	X	-	X
<i>Lepomis megalotis</i>	X	X	X	X	-	-	-	X	-	-	-
<i>Lepomis microlophus</i>	-	-	-	-	-	-	-	-	-	-	-
<i>Micropterus dolomieu</i>	X	X	X	-	-	-	-	-	-	X	-
<i>Micropterus punctulatus</i>	X	X	X	-	-	-	-	X	X	-	-
<i>Micropterus salmoides</i>	X	X	X	-	-	-	-	-	-	-	-
Species	James River	Finley Creek	Flat Creek	Crane Creek	Spring Creek	Wilson Creek	Little Finley Creek	Pearson Creek	Wild Cat Creek	Jenkin's Creek	Silver Lake Branch
<i>Pomoxis annularis</i>	X	X	X	-	-	-	-	-	-	-	-
<i>Pomoxis nigromaculatus</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Morone chrysops</i>	-	-	-	-	-	-	-	-	-	-	-
<i>Aplodinotus grunniens</i>	X	-	-	-	-	-	-	-	-	-	-

<i>Campostoma anomalam</i>	X	X	X	X	-	-	X	X	X	X	-
<i>Campostoma oligolepis</i>	X	X	X	-	-	-	-	-	-	-	X
<i>Nocomis biguttatus</i>	X	X	X	X	-	-	X	X	X	X	-
<i>Notropis boops</i>	X	-	-	-	-	-	X	-	-	-	-
<i>Notropis chrysocephalus</i>	X	X	X	X	-	-	-	X	X	X	-
<i>Notropis galacturus</i>	X	X	X	-	-	-	-	-	-	-	-
<i>Notropis greenei</i>	X	-	X	-	-	-	-	-	-	-	-
<i>Notropis nubilus</i>	X	X	X	-	-	-	X	X	X	X	-
<i>Notropis pilsbryi</i>	X	X	X	X	-	-	X	X	X	X	X
<i>Notropis rubellus</i>	X	X	X	X	-	-	X	X	-	X	-
<i>Notropis telescopus</i>	X	X	X	X	-	-	-	-	-	X	-
<i>Notropis ozarkanus</i>	-	-	X	-	-	-	-	-	-	-	-
<i>Pimephales notatus</i>	X	X	X	-	-	-	-	X	X	-	-
<i>Pimephales promelas</i>	X	-	-	-	-	-	-	-	-	-	-
<i>Phoxinus erythrogaster</i>	X	X	X	X	X	-	X	X	X	X	X
<i>Notemigonus crysoleucas</i>	-	-	-	X	-	-	-	-	-	-	-
<i>Erimyzon oblongus</i>	X	X	X	X	-	-	-	-	-	-	-

Semotilus atromaculatus	X	-	X	-	-	-	-	-	X	X	X
Hybopsis dissimilis	X	X	X	-	-	-	-	-	-	-	-
Species	James River	Finley Creek	Flat Creek	Crane Creek	Spring Creek	Wilson Creek	Little Finley Creek	Pearson Creek	Wild Cat Creek	Jenkin's Creek	Silver Lake Branch
Hybopsis amblops	X	-	X	-	-	-	-	-	-	-	-
Esox americanus	X	X	X	X	-	-	-	-	-	-	-
Fundulus catenatus	X	X	X	X	-	-	-	X	-	X	-
Fundulus olivaceus	X	X	X	X	-	-	-	X	-	X	-
Gambusia affinis	X	X	-	-	-	-	-	-	-	-	-
Labidesthes sicculus	X	X	X	-	-	-	-	-	-	-	-
Etheostoma caeruleum	X	X	X	X	-	-	X	X	X	X	X
Etheostoma e. euzonum	X	-	-	-	-	-	-	-	-	-	-
Etheostoma juliae	X	X	X	-	-	-	-	-	-	-	-
Etheostoma spectabile	X	X	X	X	X	-	X	X	X	X	X
Etheostoma zonale	X	X	X	-	-	-	-	-	-	-	-
Etheostoma blennioides	X	X	X	X	-	-	-	-	-	-	-
Etheostoma punctulatum	X	X	-	-	-	-	-	X	X	-	X
Etheostoma flabellare	X	X	-	-	-	-	-	-	X	X	-
Etheostoma stigmaeum	X	-	-	-	-	-	-	-	-	-	-

Percina evides	X	-	-	-	-	-	-	-	-	-	-
Percina c. caprodes	X	X	X	-	-	-	-	-	-	-	-
Cottus carolinae	X	X	X	X	X	-	-	X	X	X	X
Cottus hypselurus	X	X	X	X	X	-	-	X	-	-	X
Cottus bairdi	-	-	-	-	-	-	-	-	-	-	-
Noturus exilis	X	X	X	-	-	-	-	-	X	-	-
Noturus albater	X	X	X	-	-	-	-	-	-	-	-
Noturus flavater	X	X	X	X	-	-	-	-	-	-	-
Amblyopsis rosae	-	-	-	-	-	-	-	-	-	-	-

Table 24. Fish species collected in the James River by Beckman in 1994 and 1995.

COMMON NAME	SCIENTIFIC NAME
Bluegill	<i>Lepomis macrochirus</i>
Longear sunfish	<i>Lepomis megalotis</i>
Spotted bass	<i>Micropterus punctulatus</i>
Largemouth bass	<i>Micropterus salmoides</i>
Ozark bass	<i>Ambloplites constellatus</i>
Banded sculpin	<i>Cottus carolinae</i>
Stoneroller	<i>Campostoma sp.</i>
Striped shiner	<i>Luxilus chryscephalus</i>
Duskystripe shiner	<i>Luxilus pilsbryi</i>
Hornyhead chub	<i>Nocomis biguttatus</i>
Bigeye shiner	<i>Notropis boops</i>
Ozark minnow	<i>Notropis nubilus</i>
Telescope shiner	<i>Notropis telescopus</i>
Bluntnose minnow	<i>Pimephales notatus</i>
Whitetail shiner	<i>Cyprinella galactura</i>
Northern studfish	<i>Fundulus catenatus</i>
Blackspotted topminnow	<i>Fundulus olivaceus</i>
Grass pickerel	<i>Esox americanus</i>
Rainbow darter	<i>Etheostoma caeruleum</i>
Orangethroat darter	<i>Etheostoma spectabile</i>
Yoke darter	<i>Etheostoma juliae</i>
Banded darter	<i>Etheostoma zonale</i>
Logperch	<i>Percina caprodes</i>
Northern hogsucker	<i>Hypentelium nigricans</i>
Golden redhorse	<i>Moxostoma erythrurum</i>
Black redhorse	<i>Moxostoma duquesnei</i>
Gizzard shad	<i>Dorosoma cepedianum</i>

1880. As early as 1893, rainbow trout were stocked in Crane Creek in Stone County. The spread of the common carp was probably hastened by purposeful stocking of area streams in the latter half of the last century. A resident paddlefish population is currently maintained in Table Rock Lake through stocking by MDC. These fish move upstream from Table Rock Lake and into the James River annually. There is currently no evidence of successful reproduction. Threadfin shad and walleye have also been stocked in Table Rock Lake.

Crane Creek and Spring Creek in Stone County support self-sustaining populations of wild rainbow trout. Stocking records indicate that Crane Creek was last stocked in the early 1900's. Limited data suggest that Crane Creek supports a strain of wild trout closely related to the original McCloud River, California strain of rainbow trout. MDC is using offspring of these fish to help establish other wild trout populations in Missouri.

Numerous ponds throughout the basin have been stocked with a variety of fish including largemouth bass, bluegill, white crappie, redear sunfish, grass carp, and channel catfish. Escapement of channel catfish stocked by MDC in Lake Springfield probably occurs, but the extent is undocumented.

FISHING REGULATIONS

Statewide fishing regulations (daily limits, size limits, methods, and seasons) apply to most of the streams in the basin. Please refer to the most recent version of the Wildlife Code of Missouri and signs posted at public accesses for specific regulations.

AQUATIC INVERTEBRATES

Aquatic invertebrates have been sampled extensively by Tracey (1979) and by Dieffenbach and Ryck (1976) ([Table 25](#)). Dieffenbach and Ryck (1976) assessed the effects of pollutants on stream water quality using the density, diversity, and composition of bottom-dwelling invertebrates as a reflection of water quality at a variety of sites.

Dieffenbach and Ryck (1976) concluded that the upper portion of the James River had invertebrate communities characteristic of unpolluted Ozark streams. There were, however, pollution related concerns on several major tributaries and the lower James River. Pearson Creek had reduced invertebrate community indices, most likely as a result of some combination of pollution and the substantial influence of spring flow on the reach sampled. Index values were depressed in Flat Creek near Cassville, but recovered in its lower reaches. In Finley Creek, indices reflected good water quality in upstream reaches, but were depressed in a seven mile reach below Ozark and Nixa. Wilson Creek was severely impacted for approximately five miles below the Southwest Wastewater Treatment Plant, and about 14 miles of the James River below Wilson Creek were moderately affected.

Youngsteadt (1995) conducted a more recent survey of the invertebrate community on Pearson Creek. He found that aquatic ecosystem health is worse in lower Pearson Creek than in its upper reaches and that it is worse in general than it was in 1965.

Table 25. Aquatic invertebrates found in the James River Basin.

CLASS	ORDER	FAMILY	SPECIES
INSECTA	EPHEMEROPTERA	Baetidae	<i>Baetis sp.</i> <i>Baetis tricaudatus</i> <i>Centroptilum sp.</i> <i>Pseudocloeon sp.</i> <i>Callibaetis sp.</i> <i>Acentrella sp.</i>
		Caenidae	<i>Caenis sp</i>
		Ephemerellidae	<i>Ephemerella bicolor</i> <i>Ephemerella subvaria</i> <i>Ephemerella deficiens</i> <i>Ephemerella dorothaea</i> <i>Ephemerella needhami</i> <i>Serratella sp.</i> <i>Serratella deficiens</i> <i>Dentatella sp.</i>
		Ephemeridae	<i>Ephemera simulans</i> <i>Ephemera sp.</i> <i>Ephemera varia</i> <i>Ephemera guttulata</i> <i>Hexagenia limbata</i>
		Heptageniidae	<i>Heptagenia sp.</i> <i>Heptagenia maculipennis</i> <i>Rithrogena jejuna</i> <i>Rithrogena pellucida</i> <i>Stenacron interpunctatum</i> <i>Stenacron gildersleevei</i> <i>Stenonema nepotellum</i> <i>Stenonema bednariki</i> <i>Stenonema exiguum</i> <i>Stenonema femoratum</i>

			<i>Stenonema mediopunctatum</i>
			<i>Stenonema integrum</i>
			<i>Stenonema pulchellum</i>
			<i>Stenonema terminatum</i>
			<i>Stenonema tripunctatum</i>
			<i>Stenonema ares</i>
			<i>Stenonema bipunctatum</i>
		Leptophlebiidae	<i>Choroterpes sp.</i>
			<i>Choroterpes basilis</i>
			<i>Leptophlebia sp.</i>
			<i>Leptophlebia cupida</i>
			<i>Paraleptophlebia sp.</i>
			<i>Paraleptophlebia praepedita</i>
			<i>Paraleptophlebia moerens</i>
		Polymitarcidae	<i>Ephoron album</i>
			<i>Ephoron leukon</i>
		Potamanthidae	<i>Potamanthus myops</i>
			<i>Potamanthus sp.</i>
		Siphlonuridae	<i>Isonychia sp.</i>
			<i>Siphlonurus sp.</i>
		Tricordythidae	<i>Tricorythodes sp.</i>
		Baetiscidae	<i>Batisca lacustris</i>
		Palingeniidae	<i>Pentagenia villegia</i>
	ODONATA	Calopterygidae	<i>Hetaerina americana</i>
		Coenagrionidae	<i>Argia moesta</i>
			<i>Argia sp.</i>
			<i>Argia sedula</i>
			<i>Argia apicalis</i>
			<i>Argia plana</i>
			<i>Argia tibialis</i>
			<i>Enallagma civile</i>
			<i>Enallagma sp.</i>
		Gomphidae	<i>Gomphus vastus</i>
			<i>Stylogomphus albistylus</i>
			<i>Lanthus albistylus</i>

		Agrionidae	(no species name given)
		Aeshnidae	<i>Aeshna</i> sp.
PLECOPTERA		Capniidae	<i>Allocapnia vivipara</i>
			<i>Allocapnia</i> sp.
			<i>Allocapnia mystica</i>
			<i>Allocapnia granulata</i>
		Chloroperlidae	<i>Haploperla brevis</i>
			<i>Hastaperla brevis</i>
		Nemouridae	<i>Nemoura venosa</i>
			<i>Amphinemura delosa</i>
			<i>Prostoia completa</i>
		Perlidae	<i>Acroneuria evoluta</i>
			<i>Acroneuria</i> sp.
			<i>Acroneuria arida</i>
			<i>Neoperla clymene</i>
			<i>Phasgonophora capitata</i>
			<i>Paragnetenia media</i>
			<i>Perlesta placida</i>
			<i>Perlinella ehyre</i>
		Perlodidae	<i>Isogenoides varians</i>
			<i>Diploperla duplicata</i>
			<i>Isoperla</i> sp.
			<i>Isoperla nana</i>
			<i>Isoperla decepta</i>
			<i>Isoperla bilineata</i>
			<i>Isoperla minuta</i>
			<i>Isoperla richardsoni</i>
			<i>Hydroperla</i> sp.
			<i>Hydroperla crosbyi</i>
		Pteronarcidae	<i>Pteronarcys dorsata</i>
			<i>Pteronarcys peictii</i>
		Teniopterygidae	<i>Strophopteryx fasciata</i>
			<i>Taeniopteryx maura</i>
			<i>Taeniopteryx</i> sp.
			<i>Brachyptera fasciata</i>

Source: Tracey (1979), Ingersol and Jones (1979), and MDC Benthos Database and Summary dated 1995.

CLASS	ORDER	FAMILY	SPECIES
	COLEOPTERA	Dryopidae	<i>Helichus lithophilus</i>
			<i>Helichus sp.</i>
		Elmidae	<i>Dubiraphia sp.</i>
			<i>Ancyronyx variegata</i>
			<i>Narpus sp.</i>
			<i>Optioservus sandersoni</i>
			<i>Stenelmis crenata</i>
			<i>Stenelmis exigua</i>
			<i>Stenelmis sp.</i>
			<i>Stenelmis beameri</i>
			<i>Stenelmis lateralis</i>
		Gyrinidae	<i>Dineutus sp.</i>
		Psephenidae	<i>Ectopria nervosa</i>
			<i>Psephenus herricki</i>
		Dytiscidae	<i>Dytiscus sp.</i>
			<i>Hydaticus piceus</i>
		Haliplidae	(no species name given)
		Hydrophilidae	<i>Berosus sp.</i>
			<i>Helophorus sp.</i>
			<i>Tropisternus sp.</i>
		Ptilodactylidae	(no species name given)
		Chrysomelidae	<i>Lutrochus laticeps</i>
	MEGALOPTERA	Corydalidae	<i>Corydalus cornutus</i>
			<i>Nigronia serricornis</i>
		Sialidae	<i>Sialis sp.</i>
		Chauliodinae	<i>Chauliodes sp.</i>
	DIPTERA	Anthericidae	<i>Atherix variegata</i>
			<i>Atherix lantha</i>
		Ceratopogonidae	<i>Bezzia sp.</i>
		Chironomidae	<i>Ablabesmyia sp.</i>
			<i>Cardiocladius sp.</i>
			<i>Chrionomus sp.</i>

			<i>Cricotopus sp.</i>
			<i>Cryptochironomus sp.</i>
			<i>Diamesa sp.</i>
			<i>Dicrotendipes sp.</i>
			<i>Eukiefferella sp.</i>
			<i>Microtendipes sp.</i>
			<i>Orthocladius sp.</i>
			<i>Polypedilum sp.</i>
			<i>Psectrocladius sp.</i>
			<i>Stenochironomus sp.</i>
			<i>Stictochironomus sp.</i>
			<i>Tanytarsus sp.</i>
			<i>Tribelos sp.</i>
	Empididae		<i>Hemerodromia sp.</i>
			<i>Hemerodromia rogatoris coquillett</i>
	Simuliidae		<i>Simulium sp.</i>
	Tabanidae		<i>Tabanus sp.</i>
			<i>Chrysops sp.</i>
	Tanyderidae		<i>Protoplasa fitchii</i>
	Tendipedidae		(no species name given)
	Tipulidae		<i>Antocha sp.</i>
			<i>Hexatoma</i>
			<i>Tipula sp.</i>
	Heleidae		<i>Bezzia, Probezzia sp.</i>
	Muscidae		(no species name given)
	Tanypodinae		(no species name given)
	Scathophagidae		(no species name given)
	Psychodidae		<i>Pericoma sp.</i>
	Limoniinae		<i>Dicranota sp.</i>
			<i>Limonia sp.</i>
TRICHOPTERA	Glossosomatidae		<i>Agapetus sp.</i>
			<i>Glossoma sp.</i>
			<i>Glossoma intermedium</i>
			<i>Protopila sp.</i>
	Helicopsychidae		<i>Helicopsyche borealis</i>

			<i>Helicopsyche</i> sp.
		Hydropsychidae	<i>Cheumatopsyche</i> sp.
			<i>Hydropsyche arinale</i>
			<i>Hydropsyche slossonae</i>
			<i>Hydropsyche venularis</i>
			<i>Hydropsyche aerata</i>
			<i>Hydropsyche piatrix</i>
			<i>Hydropsyche morosa</i>
			<i>Hydropsyche betteni</i>
			<i>Hydropsyche bifida</i>
			<i>Hydropsyche glossonae</i>
			<i>Hydropsyche scalaris</i>
			<i>Hydropsyche simulans</i>
			<i>Potamyia flava</i>
			<i>Symphitopsyche bifida</i>
		Hydroptilidae	<i>Ochrotrichia</i> sp.
			<i>Hydroptila</i> sp.
			<i>Stactobiella</i> sp.
		Leptoceridae	<i>Ceraclea</i> sp.
		Limnephilidae	<i>Caborius</i> sp.
			<i>Neophylax</i> sp
			<i>Neophylax fuscus</i>
			<i>Ironoquia</i> sp.
		Odontoceridae	<i>Psilotreta</i> sp.
		Philopotamidae	<i>Chimarra aerrima</i>
			<i>Chimarra feria</i>
			<i>Chimarra obscura</i>
			<i>Chimarra socia</i>
		Polycentropidae	<i>Polycentropus cinereus</i>
			<i>Polycentropus</i> sp.
		Ptilodactylidae	(no species name given)
		Polycentropodidae	<i>Nyctiophylax moestus</i>
		Rhyacophilidae	<i>Rhacophila</i> sp.
		Psychomyiidae	<i>Psychomyia flavida</i>
		Hydropsychoidea	<i>Wormalida moesta</i>

Source: Tracey (1979), Ingersol and Jones (1979), and MDC Benthos Database and Summary dated 1995.

Table 25 continued.

CLASS	ORDER	FAMILY	SPECIES
ARACHNIDA	ACARIFORMES	Arachnoidea	(no species name given---water mites)
TURBELLARIA	TRICLADIDA	Planariidae	<i>Dugesia</i>
HIRUDINEA			(no species names given)
BRANCHIOBDELLIDA		Branchiobdellidae	(no species names given)
OLIGOCHAETA			(no species names given)
APHASMIDA			(no species names given)
GORDIOIDA		Gordiidae	(no species names given)
GASTROPODA			<i>Goniobasis</i> sp. <i>Ferrissia</i> sp. <i>Ferrissia fragilis</i> <i>Physa</i> sp. <i>Helisoma a. ancops</i> <i>Somatogyrus crassiabris</i> <i>Elimia</i> sp. <i>Elimia potosiensis plebeius</i> <i>Gyraulus</i> sp. <i>Gyraulus parvus</i> <i>Physella</i> sp. <i>Pleurocera acuta acuta</i> <i>Fossaria</i> sp. <i>Physidae</i> (no species names given) <i>Planorbidae</i> (no species names given) <i>Lymnaeidae</i> <i>Lymnaea</i> sp. <i>Amnicola</i> sp. <i>Amnicola limosa parva</i>
PELECYPODA	UNIONIDAE	Unioninae	<i>Actinonaias ellipsiformis</i> <i>Sphaerium</i> <i>Psidium</i> sp. <i>Pleurobema utterbacki</i>

			<i>Pleurobema coccineum</i>
			<i>Potamilus purpuratus</i>
			<i>Leptodea fragilis</i>
			<i>Amblema plicata plicata</i>
			<i>Corbicula fluminea</i>
			<i>Alasmidonta viridis</i>
			<i>Lasmigona costata</i>
			<i>Lampsilis sp.</i>
			<i>Lampsilis reeviana brevicula</i>
			<i>Lampsilis ventricosa</i>
			<i>Phytobranchus occidentalis</i>
			<i>Lampsilis abrupta</i>
			<i>Lampsilis radiata luteola</i>
			<i>Venustaconcha pleasi</i>
			<i>Venustaconcha ellipsiformis</i>
			<i>Actinonaias ligamentina</i>
			<i>Lasmigona costata</i>
			<i>Cyclonaias tuberculata</i>
			<i>Strophitus undulatus undulatus</i>
			<i>Elliptio sp.</i>
			<i>Villosa iris iris</i>
			<i>Toxolasma lividus</i>
			<i>Anodonta grandis grandis</i>
			<i>Anodonta imbecilis</i>
	Ambleminae		<i>Fusconaia ozarkensis</i>
	Gammaridae		<i>Allocrangonyx sp.</i>
			<i>Allocrangonyx pellucidus</i>
			<i>Asellus stygius</i>
			<i>Synurella bifurca</i>
			<i>Crangonyx minor</i>
			<i>Gammarus pseudolimnaeus</i>
			<i>Gammarus fasciatus</i>
	Talitridae		<i>Hyalella azteca</i>
ISOPODA	Asellidae		<i>Asellus sp.</i>
			<i>Caecidotea sp.</i>

			<i>Caecidotea stygius</i>
			<i>Lirceus sp.</i>
	DECAPODA	Cambarinae	<i>Orconectes menae</i>
			<i>Orconectes longidigitus</i>
			<i>Orconectes hylas</i>
			<i>Orconectes punctimanus</i>
			<i>Orconectes neglectus</i>
			<i>Orconectes naias</i>
			<i>Orconectes ozarkae</i>
			<i>Orconectes luteus</i>
			<i>Orconectes eupunctus</i>
			<i>Orconectes marchandi</i>
		Cambarellinae	<i>Cambarellus pueur</i>

Source: Tracey (1979), Ingersol and Jones (1979), and MDC Benthos Database and Summary dated 1995.